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10/062,758	01/29/2002	Steven B. Elgee	10013857 -1	2415

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EXAMINER

LIANG, LEONARD S

ART UNIT PAPER NUMBER

2853

DATE MAILED: 10/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/062,758	ELGEE ET AL.	
	Examiner	Art Unit	
	Leonard S. Liang	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13-15, 17-22, 24-26, 31-34 and 36-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-15, 17-22, 24-26, 31-34 and 36-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 11, 14-15, 17, 20, 22, 26, 31-33, 37-38, and 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gandy et al (US Pat 5376957) in view of Ort (US Pat 4340893).

Gandy et al discloses:

- {claim 1} An inkjet printing mechanism, a media support (figure 1); a first carriage which scans an inkjet printhead across a print surface of the print media in the printzone (figure 1, reference 23, 25); heating elements positioned on each side of the sheet and in alignment with each other (figure 1, reference 28, figure 3, reference 29; column 3, line 65-column 4, line 4; column 5, line 64-column 6, line 2; thus though Gandy only shows heating lamps 28 and 29 in the figures, there are actually two additional lamps which correspond to lamps 28 and 29 respectively, which are positioned in alignment with lamps 28 and 29 and used to

heat the other side of the sheet. One pair of these heaters is used for pre-heating and the other is used for post-heating)

- {claim 11} wherein the printhead directs ink droplets into the printzone and onto the media, and the heating element creates a heat zone at a surface of the media (figure 1; abstract)
- {claim 14} An inkjet printing mechanism, a printzone (figure 1); a first carriage opposing a print surface of print media in the printzone, the first carriage supporting an inkjet printhead (figure 1, reference 23); a second carriage opposing a backing surface of print media in the printzone (figure 1, reference 25); heating elements positioned on each side of the sheet and in alignment with each other (figure 1, reference 28, figure 3, reference 29; column 3, line 65-column 4, line 4; column 5, line 64-column 6, line 2; thus though Gandy only shows heating lamps 28 and 29 in the figures, there are actually two additional lamps which correspond to lamps 28 and 29, respectively which are positioned in alignment with lamps 28 and 29 and used to heat the other side of the sheet. One pair of these heaters is used for pre-heating and the other is used for post-heating)
- {claim 15} the print media has a print surface exposed to the printhead to receive ink therefrom, and has an opposing surface opposite the print surface (figure 1)
- {claim 17} the inkjet printhead projects ink droplets into the printzone as print imaging on media when in the printzone, the print imaging receiving heat energy from the heat element (figure 1; abstract; column 3, lines 26-68; column 4, lines 1-4)

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- {claim 20} the printing mechanism synchronously scans the first carriage and the second carriage to maintain a selected alignment therebetween (column 5, lines 60-63)
- {claim 22} A method of applying print imaging by ink droplet deposition on media and drying the print imaging, reciprocating a first carriage across a print surface of media in a printzone; projecting from the first carriage ink droplets as the print imaging (figure 1); synchronously scanning a second carriage across a backing surface of media relative to the first carriage (column 5, lines 60-63); heating elements positioned on each side of the sheet and in alignment with each other (figure 1, reference 28, figure 3, reference 29; column 3, line 65-column 4, line 4; column 5, line 64-column 6, line 2; thus though Gandy only shows heating lamps 28 and 29 in the figures, there are actually two additional lamps which correspond to lamps 28 and 29 respectively, which are positioned in alignment with lamps 28 and 29 and used to heat the other side of the sheet. One pair of these heaters is used for pre-heating and the other is used for post-heating)
- {claim 26} controllably advancing media in a feed direction through the printzone (figure 1)
- {claim 31} A printing method; applying ink having an evaporable component to a print media (figure 1; abstract); heating elements positioned on each side of the sheet and in alignment with each other (figure 1, reference 28, figure 3, reference 29; column 3, line 65-column 4, line 4; column 5, line 64-column 6, line 2; thus though Gandy only shows heating lamps 28 and 29 in the figures, there are

actually two additional lamps which correspond to lamps 28 and 29 respectively, which are positioned in alignment with lamps 28 and 29 and used to heat the other side of the sheet. One pair of these heaters is used for pre-heating and the other is used for post-heating)

- {claim 33} the applying comprises scanning a printhead across the media (figure 1, reference 23, 25)
- {claim 37} advancing the media through the printzone between each of a series of the applying and the moving (figure 1)
- {claim 38} An inkjet printing mechanism; means for reciprocating a carriage relative to a printzone, printing means (figure 1; column 5, lines 49-63); heating elements positioned on each side of the sheet and in alignment with each other (figure 1, reference 28, figure 3, reference 29; column 3, line 65-column 4, line 4; column 5, line 64-column 6, line 2; thus though Gandy only shows heating lamps 28 and 29 in the figures, there are actually two additional lamps which correspond to lamps 28 and 29 respectively, which are positioned in alignment with lamps 28 and 29 and used to heat the other side of the sheet. One pair of these heaters is used for pre-heating and the other is used for post-heating)
- {claim 41} the printing means comprises an inkjet printing device projecting ink droplets therefrom (figure 1, reference 23, 25)
- {claim 42} An inkjet printing medium comprising: a reciprocating printing device projecting ink droplets therefrom along a print swath, the print swath having a print swath height (figure 1); heating elements positioned on each side of the

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sheet and in alignment with each other (figure 1, reference 28, figure 3, reference 29; column 3, line 65-column 4, line 4; column 5, line 64-column 6, line 2; thus though Gandy only shows heating lamps 28 and 29 in the figures, there are actually two additional lamps which correspond to lamps 28 and 29 respectively, which are positioned in alignment with lamps 28 and 29 and used to heat the other side of the sheet. One pair of these heaters is used for pre-heating and the other is used for post-heating)

Gandy et al differs from the claimed invention in that it does not disclose:

- {claim 1} the first carriage supports a first portion of a heating element proximal to the printhead that scans the print surface with the printhead; a second portion of the heating element being carried by a second carriage across a backing surface of the print media, wherein the second portion of the heating element scans the backing surface of the print media in synchronous alignment to the first portion of the heating element
- {claim 14} the first carriage supporting an inkjet printhead and a first heating element portion that scan across the print surface; and the second carriage holding a second heater element portion, the first and second heater element portions forming a heater element that synchronously scans with the first and second heater element portions in alignment
- {claim 22} projecting from a first heater element on the first carriage radiant energy applied as heat energy to the media; and synchronously scanning a second carriage across a backing surface of media relative to the first carriage, the

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second carriage holding a second heater element in cooperative alignment with the first heater element to apply the heat energy to the media

- {claim 31} thereafter, moving a heat zone across the media to accelerate evaporation of the evaporable component, the heat zone being generated by cooperative first and second heating elements moving synchronously in alignment opposite sides of the print media interposed therebetween
- {claim 32} moving comprising scanning a heating element across the media
- {claim 38} means for applying heat energy to the media and supported by the carriage means, the means for applying heat energy including cooperative first and second heater elements, the first heater element being positioned opposing a print surface of the media and the second heater element opposing a backing surface of the media and scanning in synchronous alignment with the first heater element
- {claim 42} a reciprocating heating element projecting energy therefrom and applied as heat energy to media adjacent thereto along a heat swath height, the heat swath height being greater than the print swath height whereby print imaging produced by the ink droplets receives the heat energy through a first and second portion of the heating element moving synchronously in alignment on opposite sides of the media

Ort discloses:

- {claims 1, 14, 22, 31, and 38} a heater on a carriage (figure 2, reference 46)

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- {claim 42} the heat swath height being greater than the print swath height whereby print imaging produced by the ink droplets receives the heat energy through at least a first and second reciprocation of the heating element (figure 2, reference 33, 44, 45; it is clear from the figure that dryers are farther from the print surface than the face of the ink jet droplet emitter; looking at figure 2 from a vertical perspective, it is clear that the heat swath height is greater than the print swath height); a heater on a carriage (figure 2, reference 46)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Ort into the invention of Gandy et al. The motivation for the skilled artisan in doing so is to gain the benefit of reducing the number of heaters needed. Gandy et al discloses four heaters, two for pre-heating and two for post-heating. By placing heaters on the carriages, a more continuous drying cycle is effected and only two heaters are needed. The combination naturally suggests that moving comprise scanning a printhead across the media; wherein the heating element has first and second portions each supported by the first carriage and the second carriage, respectively; synchronously scanning a second carriage relative to the first carriage, the second carriage holding a heater element cooperative with the heater on the first carriage to apply the heat energy to the media.

Claims 2, 5, 8-10, 13, 19, 24-25, 34, 36, and 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gandy et al (US Pat 5376957) in view of Ort (US Pat 4340893), as applied to claims 1, 11, 14-15, 17, 20, 22, 26, 31-33, 37-38, and 41-42 above, and further in view of Meyers et al (US Pat 6463674).

Gandy et al, as modified, teaches all limitations of the claimed invention except for the following:

- {claim 2} microwave heating element
- {claim 5} radio frequency heating element
- {claim 8} a stationary blower
- {claim 9} a radio frequency applicator
- {claim 10} a microwave applicator
- {claim 13} the first and second heating element portions define a gap therebetween, the gap comprising a heat zone generated by the heating element
- {claim 19} the first and second heater element portions cooperatively form a microwave applicator
- {claim 24} the first and second heater elements comprise a microwave heater
- {claim 25} the first and second heater elements comprise an RF heater
- {claim 34} the heat zone using microwave heating produced cooperative by the first and second heating elements
- {claim 36} generating the heat zone from RF heating produced cooperative by the first and second heating elements
- {claim 39} microwave energy source
- {claim 40} RF energy source

Meyers et al discloses:

- {claim 2} microwave heating element (column 1, line 29)
- {claim 5} radio frequency heating element (column 1, lines 54-56)

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- {claim 8} a stationary blower (figure 3, reference 126)
- {claim 9} a radio frequency applicator (column 1, lines 54-56)
- {claim 10} a microwave applicator (column 1, line 29)
- {claim 13} the first and second heating element portions define a gap therebetween, the gap comprising a heat zone generated by the heating element (figure 3)
- {claim 19} the first and second heater element portions cooperatively form a microwave applicator (figure 3; column 1, line 29)
- {claim 24} the first and second heater elements comprise a microwave heater (column 1, line 29)
- {claim 25} the first and second heater elements comprise an RF heater (column 1, lines 54-56)
- {claim 34} the heat zone using microwave heating produced cooperative by the first and second heating elements (figure 3, reference 141, 151; column 1, line 29)
- {claim 36} generating the heat zone from RF heating produced cooperative by the first and second heating elements (column 1, lines 54-56)
- {claim 39} microwave energy source (column 1, line 29)
- {claim 40} RF energy source (column 1, lines 54-56)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Meyers et al into the invention of modified Gandy et al. The motivation for the skilled artisan in doing so is to gain the benefit of actively

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drying the media in a rapid continuous manner using a variety of drying means so that no subsequent drying period is needed (column 2, lines 16-22).

Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gandy et al (US Pat 5376957) in view of Ort (US Pat 4340893) and Meyers et al (US Pat 6463674), as applied to claim 2, and further in view of Carreira et al (US Pat 5220346).

Gandy et al, as modified, further discloses:

- {claim 4} the heat zone scans synchronously with the carriage (naturally suggested in view of combination of Gandy et al and Ort et al)

Gandy et al, as modified, differs from the claimed invention in that it does not disclose:

- {claim 3} the microwave heating element includes a bi-furcated waveguide spanning the first portion and the second portion of the heating element and defining a heat zone therebetween

Carreira et al discloses:

- {claim 3} the microwave heating element includes a bi-furcated waveguide spanning the first portion and the second portion of the heating element and defining a heat zone therebetween (figure 7A, reference 13; column 10, lines 61-68)

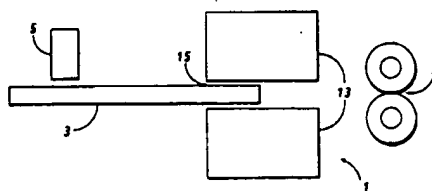


FIG. 7A

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Carreira et al into the invention of modified Gandy et al. The motivation for the skilled artisan in doing so is to gain the benefit of enabling good print quality and minimal showthrough and strikethrough (column 4, lines 6-9). The combination naturally suggests a first carriage and second carriage with one holding a microwave load and the other holding a microwave source.

Claims 18, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gandy et al (US Pat 5376957) in view of Ort (US Pat 4340893), as applied to claim 14, and further in view of Carreira et al (US Pat 5220346).

Gandy et al, as modified, discloses:

- {claim 18} first and second heater elements (Meyers et al figure 3, reference 141, 151)
- {claim 21} heating element is a microwave heating element (column 1, line 29)

Gandy et al, as modified, differs from the claimed invention in that it does not disclose:

- {claim 18} a microwave energy source and a first portion of a waveguide, a microwave load, and a second portion of a waveguide, the first and second waveguide portions together forming a waveguide directing microwave energy from the source to the load, the printzone occupies space between the first portion of the waveguide and the second portion of the waveguide

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- {claim 21} at least one of the first carriage and the second carriage holding a microwave load and the other one of the first carriage and the second carriage supporting a microwave source

Carreira et al discloses:

- {claim 18} a microwave energy source and a first portion of a waveguide, a microwave load, and a second portion of a waveguide, the first and second waveguide portions together forming a waveguide directing microwave energy from the source to the load, the printzone occupies space between the first portion of the waveguide and the second portion of the waveguide (column 1, line 29; figure 7A, reference 3, 13, 15; column 10, lines 61-68; microwave source and load are inherent to waveguide)
- {claim 21} at least one of the first carriage and the second carriage holding a microwave load and the other one of the first carriage and the second carriage supporting a microwave source (microwave load and source (column 1, line 29; figure 7A, reference 3, 13, 15; column 10, lines 61-68)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Carreira et al into the invention of modified Gandy et al. The motivation for the skilled artisan in doing so is to gain the benefit of enabling good print quality and minimal showthrough and strikethrough (column 4, lines 6-9). The combination naturally suggests a first carriage and second carriage with one holding a microwave load and the other holding a microwave source.

Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gandy et al (US Pat 5376957) in view of Ort (US Pat 4340893) and Meyers et al (US Pat 6463674), as applied to claim 5, and further in view of Woo et al (US Pat 5645904)

Gandy et al, as modified, further discloses, with respect to claim 7, the heat zone scans synchronously with the carriage (naturally suggested in view of combination of Gandy et al and Ort et al).

Gandy et al, as modified, differs from the claimed invention in that it does not disclose the radio frequency heating element includes as the first portion first electrodes and as the second portion second electrodes, a heat zone being positioned therebetween.

Woo et al discloses, with respect to claim 6, the radio frequency heating element includes as the first portion first electrodes and as the second portion second electrodes (column 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Woo et al into the invention of modified Gandy et al. The motivation for the skilled artisan in doing so is to gain the benefit of efficient heating (column 1, lines 16-18). The combination naturally suggests that a heat zone is positioned between electrodes.

Response to Arguments

Applicant's arguments filed 06/20/05 have been fully considered but they are not persuasive. The applicant's arguments are overcome in light of the deeper interpretation of Gandy et al disclosed above. It was previously believed that Gandy et al did not disclose drying on both sides of the sheet, since Gandy only disclosed a heater 28 in figure 1 and a heater 29 in

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figure 3. However, as discussed in the above rejection, it appears that Gandy actually discloses two other heaters that work with heaters 28 and 29, respectively to pre-heat and post-heat both sides of the medium. From here, we see that Gandy discloses carriages, which move in synchronous alignment with each other. Gandy also discloses heaters on both sides of the sheet, which are aligned with each other. The only thing that Gandy lacks is the teaching of placing heaters on a carriage. This deficiency is taught in Ort. The advantages of combining Gandy et al in view of Ort should be obvious to one of ordinary skill in the art. By placing heaters directly on the carriage, it is possible to enact consistent and constant drying throughout the entire printing process instead of just before and after it. Furthermore, doing so reduces the number of heaters needed in half. The above rejection is considered proper and the applicant's arguments are hereby considered traversed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard S. Liang whose telephone number is (571) 272-2148. The examiner can normally be reached on 8:30-5 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

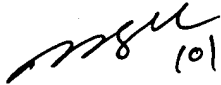
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10/3/05
MANISH S. SHAH
PRIMARY EXAMINER